

WHAT IS CLAIMED IS:

1. A method of identifying at least one polymer for binding with a receptor comprising the steps  
5 of:

a) on a substrate, said substrate comprising polymers immobilized on a surface of said substrate, said polymers comprising a photoremovable protective group, irradiating a first region of said substrate without  
10 irradiating a second region of said substrate to remove said protecting group from said polymers in said first region; and

b) contacting said substrate with a first monomer to couple said monomer to said polymer in  
15 said first region, forming a first polymer on said substrate in said first region that is different from said polymer in said second region.

2. The method as recited in claim 1 wherein  
20 said step of irradiating is a step of masking a light source with a mask, said mask comprising first transparent regions and second opaque regions, said transparent regions transmitting light from said source to said first regions, and said opaque regions blocking  
25 light from said source to said second regions.

3. The method as recited in claim 1 wherein  
said first and second regions each have total areas less than about 1 cm<sub>2</sub>.  
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4. The method as recited in claim 1 wherein  
said steps of irradiating are conducted with a monochromatic light.

35 5. The method as recited in claim 1 wherein  
said step of irradiating a first region is a step of masking a light source with a mask located in a first

position, and wherein said step of irradiating a second region is a step of masking a light source with said mask located in a second position.

5         6. The method as recited in claim 1 wherein the step of irradiating further comprises the steps of:

a) placing a mask adjacent to said substrate, said mask having substantially transparent regions and substantially opaque regions at a wavelength 10 of light; and

b) illuminating said mask with a light source, said light source producing at least said wavelength of light.

15         7. The method as recited in claim 1 wherein said steps of irradiating are repeated so as to synthesize  $10^3$  different polymers on said substrate.